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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,272	06/20/2003	Yasushi Enokido	MIT 10282 US	6440

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EXAMINER	
MAI, NGOCLAN THI	
ART UNIT	**PAPER NUMBER**
1742	

DATE MAILED: 11/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/601,272	ENOKIDO, YASUSHI
	Examiner	Art Unit
	Ngoclan T. Mai	1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-10 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5/2804 &12/22/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hampden-Smith et al. US 6,277,169

Hampden-Smith et al a disclose a thick film slurry including silver-containing powder dispersed in a liquid vehicle comprising methanol, ethanol, other alcohols or the like, see col. 55, line 23 to col. 56, line 12. Note that methanol and ethanol are low molecular weight alcohols. For making electrode, Hampden-Smith et al teach using silver-containing particles of substantially spherical in shape which have average particle size of from 0.5 micron to about 3 microns and narrow size distribution, see abstract and col. 52, lines 65-67.

Regarding claim 3, since tap density of a material is known to depend on the composition, shape and size of the material, the silver-containing powder taught by Hampden-Smith et al. inherently has the claimed tap density because the powder taught by Hampden-Smith has the same shape and size and is of the same composition as the applicant, i.e., silver, (applicant paragraph [0040]).

> "Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best, 195 USPQ 430, 433

> (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best, 195 USPQ 430, 433 (CCPA I 977)."

Regarding claim 6, Hampden-Smith et al teach a method for making silver-containing powder by heating an aerosol of droplets of silver-containing meal precursor in carrier gas such as hydrogen, col. 9, line 55 to col. 11, line 60. The silver-containing powder comprises silver-containing particles of substantially spherical and having particle size of from 0.2 to about 3 microns, the powders are taught for used in making internal electrodes of multiplayer ceramic capacitor, col. 28, lines 41-60 and col. 35, lines 27-49.

With regarding claim 8, Hampden-Smith et at teach other additives can be added to aid the dispersion and flow properties of the slurry, which include thickeners, stabilizing agents, and wetting agent, col. 55, line 52 to col. 56, line 12. Note that these additives include and read on the claimed dispersant.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2, 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hampden-Smith et al. in view of WO98/56566.

Hampden-Smith et al disclose the metal slurry substantially as claimed. The difference between the claims and Hampden-Smith et al. is that Hampden-Smith et al do not specifically teach employing water as dispersing medium.

WO98/56566 discloses employing either water or alcohol or mixture thereof as dispersion medium to disperse metallic powder including silver having similar particle sizes as Hampden-Smith et al. to form a slurry, see page 31, lines 1-12.

Since WO98/56566 disclose water is conventionally known in the same field of endeavor for use as dispersing medium for small particles of metal, therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ water, a well known substitute for alcohol to disperse the spherical silver-containing metal powder taught by Hampden-Smith et al

With regarding claim 10, since Hampden-Smith et al teach the silver containing powder is produced by heating an aerosol of droplets of silver containing precursor in carrier gas hydrogen that contribute to formation of the particles, col. 10, line 5-14. Since it is known that hydrogen is a reducing gas, the silver containing powder taught by Hampden-Smith et al is therefore produced by a reduction method.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hampden-Smith in view of Parker et al and Shimizu et al.

The difference between the claim and Hampden-Smith et al is that Hampden-Smith et al do not teach the sediment density of the slurry.

Parker et al teach that it is known that one can only obtain maximum green density with maximum sediment density, which results in a correspondingly dense cast slip having optimum packing of particles and that to obtain optimum packing one must use particles with as narrow a size distribution as possible, allow them to settle slowly out of suspension and to do so without agglomeration with the help of a dispersant, col. 1, lines 29-37.

Base on this teaching it would have been obvious to one of ordinary skill in the art at the time the invention was made in order to obtain a dense cast slip, a high sediment density of the metal slurry taught by Hampden-Smith must be obtained. Since the silver-containing powder taught by Hampden-Smith is already narrow in size distribution and the dispersant is taught to improve dispersability, determination of an optimum or preferred amount of sediment density of the metal slurry thereby obtaining desire denseness is within the skill of artisan, absent unexpected result.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hampden-Smith in view of Shimizu et al.

The difference between the claim and Hampden-Smith et al is that Hampden-Smith et al do not teach the amount of dispersant.

Shimizu et al. teach an electroconductive paste having little undispersed particles of a solid component, i.e. metals such as Ag, Ni, Cu and Pd in the paste, the paste

comprises metal particle having particle size less than 1 micron dispersed in organic vehicle containing dispersant in an amount of 0.05 to 10.0 parts by weight, col. 2, line 17 to col. 3, line 7.

Since Shimizu et al teach in the same field of endeavor, it would have been obvious to one of ordinary skill in the art to add dispersant to the slurry of Kodas et al in the amount taught by Shimuzu et al because this amount as taught by Shimuzu et al is to improve the dispersability of solid particle in the paste for making electroconductive material.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hampden-Smith in view of Kodas et al.

The difference between the claim and Hampden-Smith et al is that Hampden-Smith et al do not teach mixing by the slurry by ultrasonic vibration.

Kodas et al teach that it is known to those in the art that micrometer-sized particles often form soft agglomerates as a result of their relatively high surface energy (compared to larger particles) and it is also known to those skilled in the art that soft agglomerates may be dispersed easily by treatments such as exposure to ultrasound in a liquid medium, col. 33, lines 19-38.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to mix the slurry containing micron-sized silver-containing particles in organic solvent taught by Hampden-Smith by ultrasonic vibration as this taught to improve the dispersability of the particles by Kodas.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoclan T. Mai whose telephone number is (571) 272-1246. The examiner can normally be reached on 9:30-6:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ngoclan T. Mai
Primary Examiner
Art Unit 1742

n.m.